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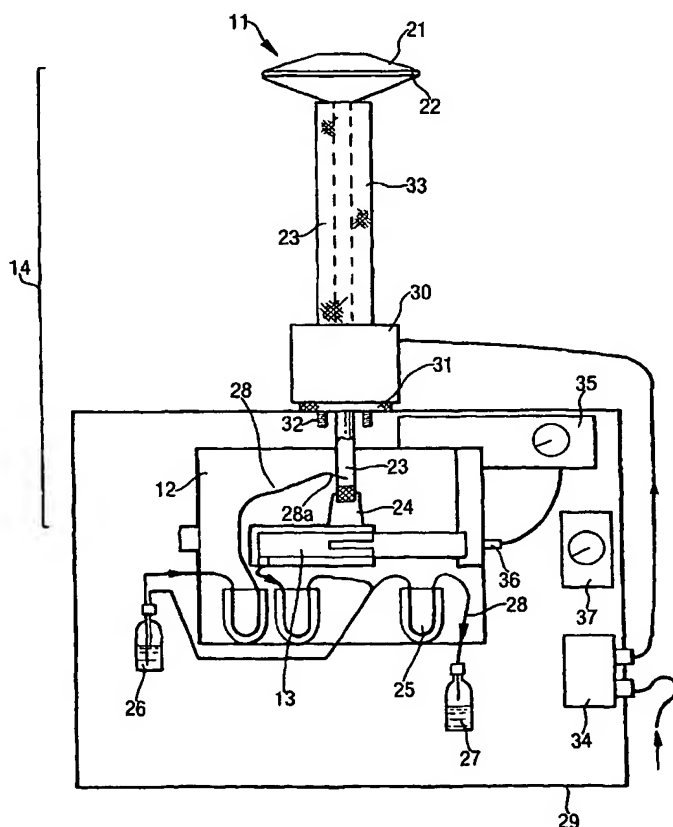
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[Continued on next page]

(54) Title: APPARATUS FOR SEPARATING AND COLLECTING PARTICLES



(57) Abstract: Improved apparatus for collecting par-  
ticles from air comprises a cyclone (13) having air in-  
let (14) and outlet (15) means, means maintaining an  
airflow there through and means (28) delivering a col-  
lecting fluid from a reservoir (26) to particles separated  
from the air flow in the cyclone (13), in which the air  
inlet means (14) is associated with means for heating  
(30) the incoming air. The apparatus, which is option-  
ally provided with enclosure means for trapping heat,  
prevents freezing of the collecting fluid at temperatures  
near to and even below 0 grade C.



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# INTERNATIONAL SEARCH REPORT

International Application No  
PC 1/GB2004/000251

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B04C5/20 B04C5/18 B04C3/02 B04C9/00 B04C11/00  
F16L53/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B04C B01D G01N F16L H05B F24H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | DATABASE WPI<br>Section Ch, Week 197818<br>Derwent Publications Ltd., London, GB;<br>Class J01, AN 1978-33319A<br>XP002278766<br>-& SU 558 710 A (KUZNT COAL ENRICHME)<br>7 July 1977 (1977-07-07)<br>abstract; figure | 1-5                   |
| X          | PATENT ABSTRACTS OF JAPAN<br>vol. 013, no. 021 (C-560),<br>18 January 1989 (1989-01-18)<br>-& JP 63 224754 A (MITSUI ENG & SHIPBUILD<br>CO LTD), 19 September 1988 (1988-09-19)<br>abstract; figures                   | 1-3                   |
|            | -/-  |                       |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

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## INTERNATIONAL SEARCH REPORT

 International Application No  
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| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|--|--|-----------------------|
| Category *   | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X  | CH 251 108 A (ANDERMATT KARL)<br>15 October 1947 (1947-10-15)                      | 1,2,6-9               |
| Y  | page 2, line 4 - page 3, line 2; figure  | 12                    |
| X  | DE 20 04 808 B (F. HIRSCHMANN)<br>22 October 1970 (1970-10-22)                     | 1-5,7-9,<br>11        |
| Y  | column 3, line 28 - column 4, line 6;<br>figure                                    | 12                    |
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|  | page 2, line 19 - page 3, line 23; figure  |                       |
| A  | US 2002/078826 A1 (DAY PETER JOHN)<br>27 June 2002 (2002-06-27)                    |                       |
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|  | page 8, paragraph 2 - page 10; figures   |                       |
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|  | page 1, line 90 - page 2, line 29; figures<br>1-3,6-8                              |                       |

# INTERNATIONAL SEARCH REPORT

national application No.  
PCT/GB2004/000251

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12

Apparatus for collecting particles comprising a cyclone, air inlet and outlet means, means for delivering a collecting fluid and means for heating the incoming air associated with the air inlet means.

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2. claims: 13,14

Heating block for heating a tube comprising a plurality of segments including a half-cylindrical surface and mounting means for mounting the segments to a tube, comprising hinged box members for receiving the segments.

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# INTERNATIONAL SEARCH REPORT

ional Application No

PCT/GB2004/000251

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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